REMARKS

The Office Action dated March 22, 2007 has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

Claims 1, 11, 12, 19, 37, 38 and 45-50 have been amended to more particularly point out and distinctly claims the subject matter which is the invention. No new matter is added and no new issues are raised which require further search or consideration. Claims 1-51 are submitted for reconsideration.

Claims 45-47 were rejected under 35 U.S.C. 112, second paragraph. Claims 45-47 have been amended to overcome the rejection. Therefore, Applicant requests that the rejection be withdrawn.

Claims 48-51 were rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. Specifically, the Office Action alleged that the recitation of the claim of a computer program embodied on a computer readable medium, the computer program being for implementing OSPF redundancy is not described in the specification in such a way as to reasonably convey to one skilled in the relevant art the invention, at the time the application was filed. Applicant submits that figure 2 illustrates a schematic diagram of redundancy software of OSFP. See at least page 6, beginning at paragraph 0025. As is known to one skilled in the art, in order to implement any software, the software must be implemented in a computer program which is embodied on a computer readable medium. Figure 2 and the associated

description disclose that the computer program/software is a redundancy software of OSPF operations of an active OSPF control card and a standby OSPF control card. Therefore, Applicant submits that there is sufficient disclosure in the specification of a computer program embodied on a computer readable medium, the computer program being for implementing OSPF redundancy, to reasonably convey the invention to one skilled in the relevant art, at the time the application was filed. Based on the arguments above, Applicant requests that the rejection be withdrawn.

Claims 1-6, 9-14, 16-23, 25-40 and 42-44 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,148,410 (Baskey) in view of U.S. Patent No. 6,983,294 (Jones). According to the Office Action, Baskey teaches all of the elements of claims 1-6, 9-14, 16-23, 25-40 and 42-44, except for explicitly teaching that the protocol is an Open Shortest Path First (OSPF) protocol and that a hidden interface is created on both the active processor and the standby processor for each area during initial synchronizations, the hidden interface being unexposed and at least one hidden adjacency being automatically built over the hidden interface and being used to synchronize databases on both the active processor and the standby processor. Thus, the Office Action combined the teachings of Baskey and Jones to yield all of the elements of claims 1-6, 9-14, 16-23, 25-40 and 42-44. The rejection is traversed as being based on references that neither teach nor suggest the novel combination of features clearly recited in independent claims 1, 11, 12, 13, 19, 37, 38, and 39.

Claim 1, upon which claims 2-10 depend, recites a link protocol redundancy

method including providing a router having an active processor and coupling a standby processor to the active processor. The method also includes forwarding network link protocol information from the active processor to the standby processor for synchronizing link configuration and link protocol states of the active processor at the standby processor upon coupling of the standby processor to the active processor by maintaining a synchronization state machine for each task within a protocol. The method further includes switching the router to the standby processor when a failure is detected at the active processor. All states of the link protocol immediately function as if the failure had not occurred. A hidden interface is created on both the active processor and the standby processor for each area during initial synchronization, each area being a group of contiguous networks and attached hosts, the hidden interface being unexposed, and at least one hidden adjacency being automatically built over the hidden interface for each area and being used to synchronize databases on both the active processor and the standby processor.

Claim 11 recites an OSPF protocol redundancy method including the steps of providing a router having an active processor and coupling a standby processor to the active processor. The method also includes forwarding network OSPF protocol information from the active processor to the standby processor for synchronizing OSPF configuration and OSPF protocol states of the active processor at the standby processor by maintaining a synchronization state machine for each task within a protocol. The method further includes switching the router to the standby processor when a failure is

detected at the active processor. All states of the OSPF protocol immediately function as if the failure had not occurred. A hidden interface is created on both the active processor and the standby processor for each area during initial synchronization, each area being a group of contiguous networks and attached hosts, the hidden interface being unexposed, and at least one hidden adjacency being automatically built over the hidden interface for each area and being used to synchronize databases on both the active processor and the standby processor.

Claim 12 recites a link protocol redundancy method including providing a router having an active processor and coupling a standby processor to the active processor. The method also includes forwarding network link protocol information from the active processor to the standby processor for synchronizing link configuration and link protocol states of the active processor at the standby processor by maintaining a synchronization state machine for each task within a protocol the link protocol information is link-state database information, OSPF configuration information, OSPF adjacencies information, OSPF interface information and OSPF global protocol information. The method further includes switching the router to the standby processor when a failure is detected at the active processor. All states of the link protocol immediately function as if the failure had not occurred. A hidden interface is created on both the active processor and the standby processor for each area during initial synchronization, each area being a group of contiguous networks and attached hosts, the hidden interface being unexposed, and at least one hidden adjacency being automatically built over the hidden interface for each

area and being used to synchronize databases on both the active processor and the standby processor.

Claim 13, upon which claims 14-18 depend, recites a method for implementing OSPF redundancy including providing a router having an active processor means and a standby processor means and building a hidden OSPF interface on the active processor means and a hidden OSPF interface on the standby processor means. The hidden OSPF interface on the active processor means and the hidden OSPF interface on the standby processor means being unexposed and at least one adjacency for synchronizing database on the active processor means and on the standby processor means being automatically built over the hidden OSPF interface on the active processor means and the hidden OSPF interface on the standby processor means. The method also includes connecting the hidden OSPF interface of the active processor means to the hidden OSPF interface of the standby processor means over a communications link. The method further includes synchronizing an OSPF routing database using an OSPF protocol over the hidden OSPF interface, such that the OSPF routing database is synchronized when the hidden OSPF interface of the active processor means and the hidden OSPF interface of the standby processor means reach a full adjacency state. The method also includes transferring OSPF protocol information from the hidden OSPF interface of the active processor means to the hidden OSPF interface of the standby processor means over the communications link to mirror states of the active processor means and the standby processor means by maintaining a synchronization state machine for each task within a

protocol. The method also includes removing the hidden interface of the active processor means and the hidden interface of the standby processor means and assuming control by the standby processor means when a failure is detected in the active processor means.

Claim 19, upon which claims 20-36 depend, recites a system for providing link protocol redundancy in a router including an active processor and a standby processor. The system also includes a unit configured to forward network link protocol information from the active processor to the standby processor for synchronizing link configuration and link protocol states of the active processor at the standby processor including a redundant card manager to maintain a synchronization state machine of the link protocol states for tasks of the protocol. The system further includes a unit configured to switch the router to the standby processor when a failure is detected at the active processor. All states of the link protocol immediately function as if the failure had not occurred. A hidden interface is created on both the active processor and the standby processor for each area during initial synchronization, each area being a group of contiguous networks and attached hosts, the hidden interface being unexposed, and at least one hidden adjacency being automatically built over the hidden interface for each area and being used to synchronize databases on both the active processor and the standby processor.

Claim 37 recites a system for providing OSPF protocol redundancy in a router including an active processor and a standby processor. The system also includes a unit configured to forward network OSPF protocol information from the active processor to the standby processor for synchronizing link configuration and OSPF protocol states of

the active processor at the standby processor including a redundant card manager to maintain a synchronization state machine of the link protocol states for tasks of a protocol. The system further includes a unit configured to switch the router to the standby processor when a failure is detected at the active processor. All states of the OSPF protocol immediately function as if the failure had not occurred. A hidden interface is created on both the active processor and the standby processor for each area during initial synchronization, each area being a group of contiguous networks and attached hosts, the hidden interface being unexposed, and at least one hidden adjacency being automatically built over the hidden interface for each area and being used to synchronize databases on both the active processor and the standby processor.

Claim 38 recites a system for providing OSPF protocol redundancy in a router including an active processor and a standby processor. The system further includes a unit configured to forward network OSPF protocol information from the active processor to the standby processor for synchronizing link configuration and OSPF protocol states of the active processor at the standby processor link-state database information, OSPF configuration information, OSPF adjacencies information, OSPF interface information and OSPF global protocol information. The forwarding unit includes a redundant card manager to maintain a synchronization state machine of the OSPF protocol states for tasks of a protocol. The system also includes a unit configured to switch the router to the standby processor when a failure is detected at the active processor. All states of the OSPF protocol immediately function as if the failure had not occurred. A hidden

interface is created on both the active processor and the standby processor for each area during initial synchronization, each area being a group of contiguous networks and attached hosts, the hidden interface being unexposed, and at least one hidden adjacency being automatically built over the hidden interface for each area and being used to synchronize databases on both the active processor and the standby processor.

Claim 39, upon which claims 40-44 depend, recites a system for implementing OSPF redundancy in a router including an active processor unit and a standby processor unit. The system also includes a unit configured to build a hidden OSPF interface on the active processor unit and a hidden OSPF interface on the standby processor unit, the hidden OSPF interface on the active processor unit and the hidden OSPF interface on the standby processor unit being unexposed and at least one adjacency for synchronizing database on the active processor unit and on the standby processor unit being automatically built over the hidden OSPF interface on the active processor unit and the hidden OSPF interface on the standby processor unit. The system also includes a unit configured to connect the hidden OSPF interface of the active processor unit to the hidden OSPF interface of the standby processor unit over a communications Link. The system further includes a unit configured to synchronize an OSPF routing database using an OSPF protocol over the hidden OSPF interface, such that the OSPF routing database is synchronized when the hidden OSPF interface of the active processor unit and the hidden OSPF interface of the standby processor unit reach a full adjacency state. The system also includes a unit configured to transfer OSPF protocol information from the hidden

OSPF interface of the active processor unit to the hidden OSPF interface of the standby processor unit over the communications link to mirror states of the active processor unit and standby processor unit. The system also includes a redundant card manager to maintain a synchronization state machine of the states for tasks of the OSPF protocol and a unit configured to remove the hidden interface of the active processor unit and the hidden interface of the standby processor unit. The system further includes a unit configured to assume control by the standby processor unit when a failure is detected in the active processor unit.

Claims 45-51 recite features similar to those recited in claims 1-44.

As will be discussed below, the cited prior art references of Baskey and Jones fail to disclose or suggest the elements of any of the presently pending claims.

As discussed in previous correspondence, Baskey relates to a fault tolerant recoverable TCP/IP connection router. Baskey describes an active connection router (CR) 100 and a standby connection router (CR) 105. CRs 100 and 105 are assigned a function and a state on a per Virtual Encapsulated Cluster (VEC) basis. Standby CR 105 monitors major activities of active CR 100, so that configuration and connection tables 107 and 106 of active CR 100 and standby CR 105 are synchronized. Standby CR 105 switches states and becomes the active CR when active CR 100 fails. Standby CR 105 performs IP takeover by issuing a gratuitous ARP message, i.e., an ARP message to itself. The gratuitous ARP is broadcasted to all directly attached networks belonging to the logical subnet of the VEC. Previous hop(s) IP routers 130 and 140 update their ARP

tables. The ARP table update causes all traffic for the VEC to go to the new active CR 105. Referring to Figure 2 of Baskey, a FTR-CR includes a synchronization manager 220 that synchronizes internal tables 106 and 107. SM 220 is connected to a monitoring manager 240 that monitors the state of its own FTR-CR.

Jones discloses a redundancy system that includes an active control card and a redundant control card. Each of the control cards communication with a plurality of line interface cards via a bus. Each of the active and redundant control cards also includes a request manager, a plurality of request providers, a database including stored system information, and a redundancy manager. Each request received by the active control card is passed to the request manager. Each of the plurality of request providers is a subsystem that can process one or more types of requests. The request providers have access to the database of stored system information and to the line interface cards via the bus. During normal operation, when the request manager receives a request, the request manager selects a request provider and passes the request to the selected request provider. The selected request provider, accesses system information necessary to respond to the request, either from the database, a line card, or both. The selected request provider passes a response to the request manager which passes the response to the requesting application through a physical interface.

Jones further teaches that the request manager and physical interface of the redundant control card are inactive until a failure occurs on the active control card. The redundant control card has a reduced set of privileges, in that it can only process a limited

subset of all possible types of requests. The redundancy managers, in the control cards, are responsible for synchronizing the two cards, by synchronizing the databases on the control cards. When the redundant control card is switched on, the redundancy managers transfer system information from the active control card to the redundant control card. The redundancy managers monitor the state of the active control card and if the active control card fails, the redundant control card immediately receives a hardware interrupt indicating that the redundant control card is to assume the responsibility of the active control card. The physical interface begins communicating with the request manager of the redundant control card rather than the request manager on the active control card so that the switch is not carried out or perceived by any external management system.

Applicant submits that the combination of Baskey and Jones simply fails to teach or suggest the combination of elements recited in claims 1, 11, 12, 13, 19, 37, 38, and 39. Each of claims 1, 11, 12, 13, 19, 37, 38, and 39 recites, in part a hidden interface is created on both the active processor and the standby processor for each area during initial synchronization, each area being a group of contiguous networks and attached hosts, the hidden interface being unexposed, and **at least one hidden adjacency being automatically built** over the hidden interface for each area and being used to synchronize databases on both the active processor and the standby processor. Jones describes redundancy managers that synchronize the two control cards. There is no teaching or suggestion in the cited reference of Baskey of a hidden interface is created on both the active processor and the standby processor for each area during initial

synchronization, each area being a group of contiguous networks and attached hosts, the hidden interface being unexposed, and **at least one hidden adjacency being automatically built** over the hidden interface for each area and being used to synchronize databases on both the active processor and the standby processor, as recited in each of independent claims 1, 11, 12, 13, 19, 37, 38, and 39.

Jones does not cure any of the deficiencies of Baskey, as outlined above. Jones fails to disclose or suggest that a hidden interface is created on both the active processor and the standby processor for each area during initial synchronization, each area being a group of contiguous networks and attached hosts, the hidden interface being unexposed, and **at least one hidden adjacency being automatically built** over the hidden interface for each area and being used to synchronize databases on both the active processor and the standby processor, as recited in the presently pending claims. Jones describes redundancy managers that synchronize the two control cards. According to the Office Action, Jones teaches that synchronicity is achieved by use of a point to point communication channels. If the alleged point to point communication channels/redundancy mangers of Jones are equated with the hidden interface created on both the active and standby processor for each area during initial synchronization, as recited in the presently pending independent claims, there is no teaching in Jones of at least one hidden adjacency being automatically built over the hidden interface for each area and being used to synchronize databases on both the active processor and the standby processor, as recited in the presently pending independent claims.

In the "Response to Arguments" section, the Examiner indicated that redundancy managers 30 and 32 are not accessible by outside components; therefore, they are hidden as well as their numerous components. However, the numerous components of Jones are not equivalent to the elements recited in the pending claims. While the redundancy managers of Jones may not be accessible by the client as alleged in the Office Action, there is no teaching or suggestion in Jones that a hidden interface is created on both the active processor and the standby processor **for each area** during initial synchronization. Page 7, lines 17-18 of the current specification discloses that an area refers to a group of contiguous networks and attached hosts. Figure 3 of the current specification illustrates two areas 0 and 2, each including its own interface 14a and 14b. There is no teaching or suggestion in Jones of multiple areas, where a hidden interface is created on both the active processor and the standby processor **for each area** during initial synchronization. There is also no teaching or suggestion in Jones of **at least one hidden adjacency being automatically built** over the hidden interface (for each area) and being used to synchronize databases on both the active processor and the standby processor, as recited in the present invention. Jones merely discloses that the resource managers are responsible for synchronizing two control cards. Jones does not teach or suggest that a hidden interface is created on both the active processor and the standby processor **for each area** during initial synchronization, the hidden interface being unexposed, and **at least one hidden adjacency being automatically built** over the hidden interface and being used to synchronize databases on both the active processor and the standby

processor, as recited in the present invention. Therefore, the combination of Baskey and Jones fail to teach or suggest all of the elements recited in the presently pending claims. Based on the distinctions noted above, Applicant submits that the rejection under 35 U.S.C. 103(a) because the combination of Baskey and Jones, whether taken singly or combined, fails to teach or suggest each of the elements recited in the pending claims.

Claims 7, 8, 15, 24 and 41 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Baskey in view of Jones and an Official Notice, as evident by the Microsoft Computer Dictionary. The Office Action alleges that features of these claims, such as Inter Process Control, "are well known and expected in the art." The rejection is traversed as being based on references that neither teach nor suggest the novel combination of features clearly recited in independent claims 1, 13, 19, and 39.

Claim 7 and 8 depend on claim 1, discussed above. Claim 15 depends on claim 13, discussed above. Claim 24 depends on claim 19, discussed above. Claim 41 depends on claim 39, discussed above. Thus, each of claims 7, 8, 15, 24 and 41 incorporates all of the elements recited in each of claims 1, 13, 19, and 39, discussed above. Applicants traverse the Official Notice that features of these claims, such as Inter Process Control, are well known and expected in the art. Specifically, Applicants traverse the Official Notice that the features recited in the presently pending claims are well known in the art. Applicants not that the Official Notice does not cure any of the deficiencies of Baskey and Jones, as outlined above, with respect to claims 1, 13, 19, and 39. Specifically, the Official Notice does not teach or suggest a hidden interface is created on both the active

processor and the standby processor for each area during initial synchronization, each area being a group of contiguous networks and attached hosts, the hidden interface being unexposed, and at least one hidden adjacency being automatically built over the hidden interface for each area and being used to synchronize databases on both the active processor and the standby processor as recited in claims 1, 11, 12, 13, 19, 37, 38, and 39. Therefore, Applicant respectfully asserts that the rejection under 35 U.S.C. §103(a) should be withdrawn because neither Baskey, Jones nor the Official Notice whether taken singly or combined, teaches or suggests each feature of claims 1, 13, 19, and 39 and hence, dependent claims 7, 8, 15, 24 and 41 thereon.

As noted previously, claims 1-51 recite subject matter which is neither disclosed nor suggested in the prior art references cited in the Office Action. It is therefore respectfully requested that all of claims 1-51 be allowed and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicant's undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicant respectfully petitions for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,

Arlene P. Neal

Arlene P. Neal
Registration No. 43,828

Customer No. 32294
SQUIRE, SANDERS & DEMPSEY LLP
14TH Floor
8000 Towers Crescent Drive
Tysons Corner, Virginia 22182-2700
Telephone: 703-720-7800
Fax: 703-720-7802

APN:ksh